

AP20 Rec'd PCT/PTO 01 AUG 2006

Concerning Point III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

III.1 Claims 4-7 are in contradiction with claim 1.

Claim 1 in fact defines that the temperature gradient is created by irradiating the solder with a laser. Claim 4 defines that the temperature gradient is produced by means of an optical heating process, i.e. the subject-matter of claim 4 is wider than the subject-matter of claim 1 since claim 1 clearly defines only the use of a laser to generate this temperature gradient, i.e. other light sources are no longer contained in the subject-matter of claim 1. Claims 5-7 define the use of alternative devices for generating such a temperature gradient, which are no longer contained in the subject-matter of claim 1.

The Applicant should therefore delete these claims, since claim 1 clearly defines only one possibility for generating the temperature gradient in the component to be repaired. Claims 4-7 are not examined in this decision (see point V.2).

Concerning Point VIII

Certain observations in the international application

VIII.1 Claim 1 is not clear (Article 6 PCT). Claim 1 in fact defines a repair method for repairing a component, in which a temperature gradient is generated (by irradiating the solder with a laser) during the heating effect in the region of the site to be repaired so as to generate an oriented microstructure in the repaired site which comprises the same oriented microstructure as the surrounding base material, i.e. a clear definition of a method step by the result. It is therefore not clearly disclosed which parameters of the laser the person skilled in the art should control in order to generate such a temperature gradient so that such a result is achieved.

In the description (page 8, line 23 – page 9, line 7), when the temperature gradient is generated by a laser beam, either the speed of the moved laser beam or the laser power should be selected so that this result is achieved.

In this decision, claim 1 is examined with these following additional features (written italics); see point V.2:

Claim 1: repair method for repairing ... < see claim 1 > ... of the component (1),
the speed of the moved laser beam or the laser power being
selected so that a temperature gradient is generated in the region
of the site to be repaired, such that the same oriented
microstructure as in the surrounding base material is generated
in the repaired site.

Concerning Point V

Reasoned statement with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

V.1 Cited documents

The following documents are referred to:

D1 US-A-6 050 477 (R. BAUMANN ET AL) 18 April 2000 (2000-04-18)

D2 US-A-4 705 203 (C.C. MCCOMAS ET AL) 10 November 1987 (1987-11-10)

D3 US 2003/075587 A1 (R.W. SMASHEY ET AL) 24 April 2003 (2003-04-24)

V.1 Claims 1-8

Document D1, which is regarded as the closest prior art, discloses (Figures 1a-b and 2) a repair method for repairing a component (11; Figure 2; column 3, lines 4-9) from which the subject-matter of claim 1 differs in that the method comprises additional steps:

- a- the heating effect is created by irradiating the solder applied on the site to be repaired with a laser,
- b- the solder being melted but not the base material of the component,
- c- the speed of the moved laser beam or the laser power being selected so that a temperature gradient is generated in the region of the site to be repaired, such that the same oriented microstructure as in the surrounding base material is generated in the repaired site

The object to be achieved by the present invention can therefore be regarded as to provide an alternative repair method for repairing a component, with which damaged components that comprise a base material with an oriented structure can also be repaired.

The solution proposed for this object in claim 1 of the present application is based on an inventive step for the following reasons (Article 33(3) PCT):

a- D1 discloses a solution to this object, the temperature gradient being produced by means of an inductive heating process (Figures 1a-b). D3 also discloses another solution to this object, the temperature gradient being produced by means of a laser. The method disclosed in D3 does not describe applying the solder on the base material before the thermal irradiation, but rather melting the solder with a laser beam so that the melted solder is applied directly onto the site to be repaired. The entire component is preheated in D3 (see paragraph [0026]). The combination of Documents D1 and D3 does not lead to the subject-matter of claim 1 since the person skilled in the art would be used to all the method steps fully described in D3, i.e. not only using the inductive heating process with the laser but also applying the solder onto the site to be repaired.

Claims 2-3 and 8-10 are dependent on claim 1 and therefore likewise fulfil the PCT requirements in respect of novelty and inventive step (Article 33(2-3) PCT).